

WORKING DRAFT

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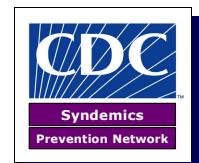
Seeing Syndemics
*Thoughts on Public Health in
Communities With Multiple Afflictions*

SYNDEMIC: *two or more afflictions, interacting synergistically, contributing to excess burden of disease in a population.* Related concepts include linked epidemics, interacting epidemics, connected epidemics, co-occurring epidemics, comorbidities, and clusters of health-related crises.

SYNDEMIC ORIENTATION: *a public health perspective that assesses connections between health-related problems, considers those connections when developing prevention policies, and aligns with other avenues of social change to assure the conditions in which people can be healthy.* This orientation complements single-issue prevention strategies, which can be effective for discrete problems but often are mismatched to the goal of improving community health in its widest sense.

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Seeing Syndemics

*Thoughts on Public Health in Communities with Multiple Afflictions*¹

Introduction

Throughout the sphere of public health and beyond there is increasing interest the meaning of a word that is not yet in the dictionary. That word is *syndemic*. It combines synergy and epidemic. If “epidemic” refers to an illness that afflicts people and compromises community health, then “syndemic” expresses the fact that those afflictions can and often do interact. It is a term invented to describe a set of linked health problems.

Most people are familiar with the fact that having one health problem can trigger new ones, making each illness worse. This happens late in life, as different diseases accumulate and reinforce one another like heart disease, diabetes, cancer, asthma, depression, and so on. It also occurs among youth, suggesting that the phenomenon is more than an artifact of aging. Youth addicted to alcohol and other drugs tend to also experience problems such as motor vehicle injuries, violence, teen pregnancy, HIV infection and others—all which interact in a variety of ways.

Illness interactions are so pervasive that it should be no surprise to see health problems clustering along society’s dividing lines (i.e., by age, gender, ethnicity, class, geography, language, etc.). Yet in spite of the clear and frequent connections among afflictions, most public health practitioners operate with resources dedicated to specific categorical problems. In fact, the routine functioning of the public health system in the U.S. is itself afflicted by what Paul Wiesner has called “hardening of the categories” (Wiesner, 1993).

Health advocates who work in communities challenged by multiple afflictions are searching for ways to overcome constraints imposed by the categorical system. That search has been underway for over 30 years, but progress in finding viable alternatives has been slow. The Syndemics Prevention Network (see <http://www.cdc.gov/syndemics>) was formed in the summer of 2001 to explore how public health practice might be different under a syndemic orientation.

This document provides a starting point for dialogue about syndemics and their implications for altering public health science and action. Feedback is welcomed so please send comments to syndemics@cdc.gov.

Working Definition: Syndemic

Public health workers have long observed interactions among diseases, but it wasn’t until the early 1990s that Merrill Singer, an anthropologist working in Hartford, CT, suggested that empirical connections among epidemics might signify the existence of a higher-order phenomenon—a syndemic (Singer, 1994). The particular syndemic that he was talking about comprised substance abuse, violence, and AIDS (Singer, 1996; Singer and Romero-Daza, 1997).

A dictionary definition does not exist; nor did Singer provide a precise explanation for what he meant by the term. We have developed the following working definition. *“A syndemic is two or more afflictions, interacting synergistically, contributing to excess burden of disease in a population.”*

¹ An adapted version of this paper was presented at the 16th National Conference on Chronic Disease Prevention and Control. February 28, 2002. Atlanta, GA.

The word turns out to be a good way of describing what happens in communities challenged by multiple afflictions. All of us who live and work in such places know that different disease processes aren't really separate. In fact, they appear to be part of a complicated, massively entangled system.

Focusing on Connections

The idea of a syndemic calls attention to connections that have always existed, but often are overlooked, unquestioned, or neglected.

Seeing syndemics can be challenging at first for those who are unaccustomed to viewing interactions between health problems as the object of study. Modern biomedical science is largely predicated on an opposite kind of reasoning. Whereas the medical model calls for causal entities from their surroundings, a syndemic then goes on to map the relationships between those entities, trying never to regard anything outside of its connection to other things. Similar procedures have been flourishing in other branches of applied science (Emirbayer, 1997), leading the way for public health advocates who have lagged behind in shifting to a relational perspective.

*You think that if you understand one,
you understand two-
because one and one are two.
But you must also understand "and."*

– Sufi Saying

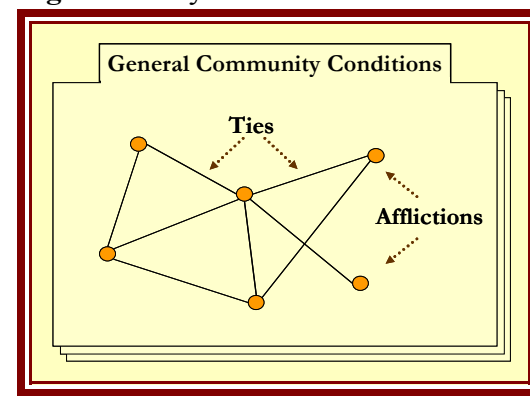
Although aspects of this orientation incorporate twenty-first century systems thinking, the underlying concept is not really new. Throughout public health history there are examples of strategies that resemble syndemic thinking even though the term was never used. There is even evidence to suggest that syndemic-oriented strategies had been more common prior to the twentieth century, before the ascendancy of medical specialization and experimental science. However those roots to the history of ideas are not the focus of this document. Suffice it to say that a syndemic perspective involves reconnecting with the core principles of public health, while incorporating methodological innovations that have emerged both within public health and in other branches of applied science.

A Syndemic Network

The practical meaning of a syndemic can be seen with a network diagram (Figure 1). The nodes represent afflictions while the edges represent ties, or forces that cause afflictions to influence one another. These relationships take shape and evolve within the context of general community conditions, which are layered from the local to the global. The problems—along with the reasons for their clustering—define a syndemic and differentiate one from another (although as in most network structures they may have nested or overlapping relationships).

Professionals, trained as disease specialists, focus mainly on the nodes. Community leaders, steeped in neighborhood context, tend to focus on the ties. That is a bit of an oversimplification, but it is frequently true that health advocates who work in their own communities tend to look beyond specific diseases to see forces that hold the entire constellation of disorders together. Those connecting forces can be as much of a problem as the diseases themselves. Sometimes they are even

Figure 1 A Syndemic Network



more so, because the overall burden of disease in the community usually persists unless connections are taken into account.

These differing orientations can create tension between health professionals and community leaders as they negotiate the proper scope for a health improvement project. Because resources are almost always allocated to specific health problems, professionals often try to keep the scope as narrow as possible believing that this will enhance the chances of demonstrating attributable effects. Community leaders, on the other hand, are better able to place problems in context and consider them as a group. This leads them to conclude that comprehensive interventions are the more sensible strategy. Under conventional scientific frameworks, resolving this tension means sacrificing either the project's evaluability (because the program becomes too diffuse and unstable) or its chances of achieving meaningful results (because of the focus on small problems and not the big picture) (Schorr, 1997). A syndemic orientation offers a better way to resolve the dilemma.

Even as colleagues continue to attack specific epidemics, others operating from a syndemic orientation may begin to devise long-range prevention policies that address a different set of risk and protective factors: those associated with syndemics.

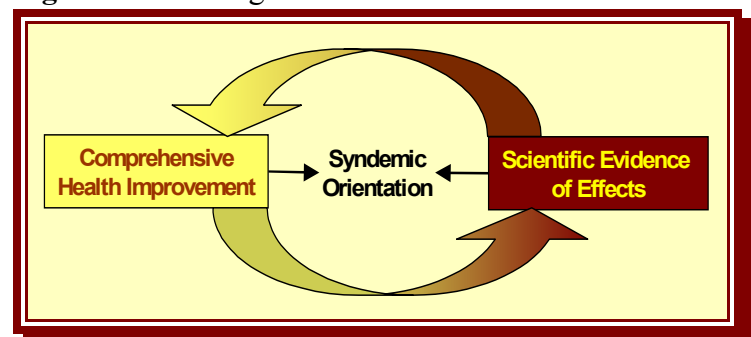
As noted earlier, many people have understood the attributes of syndemics without using this term. Community leaders, social scientists, health educators and others have strong traditions of addressing connections between health problems and even between health and social problems. Yet, even today their work at the community level is criticized for falling outside the limits of accepted frameworks grounded in the categorical assumptions of prevention science.

Balancing Values

Figure 2 depicts the tension that most public health advocates experience when trying to balance the need for comprehensive interventions with conventional notions of science.

Health improvement initiatives are clearly becoming more ecological and comprehensive. At the same time, demands for outcomes and accountability are increasing the pressure to document categorical effects. Unfortunately, “the desire to engage in comprehensive health planning stands in contrast to what most public health agencies are prepared to do. Ingrained in our financial structures, scientific frameworks, and statistical models is the idea that each affliction can be prevented individually by understanding its unique causes and developing targeted interventions” (Homer and Milstein, 2002:p.1).

Figure 2 Balancing Values



Most public health workers struggle with this tension on a daily basis. Sometimes a balance can be found, other times it is a real stretch. The fit is usually best when stakeholders operate from an orientation that recognizes the syndemic character of affliction. When this view is used, even if the word itself is not, stakeholders tend to agree more rapidly on appropriate strategies for both intervention and evaluation.

Working Definition: Syndemic Orientation

A syndemic orientation is a public health perspective that assesses connections between health-related problems, considers those connections when developing prevention policies, and aligns with other avenues of social change to assure the conditions in which people can be healthy.

This orientation fits within a larger class of ecological perspectives (Green and Kreuter, 1999; Green, Richard and Potvin, 1996; Grzywacz and Fuqua, 2000; Honari and Boleyn, 1999), but differs from existing models in its explicit concern for interactions between afflictions, and in its relationship to practices at the categorical level. In other words, while elevating prevention practice to a systems-level, a syndemic orientation reinforces the continuing need to address unique afflictions uniquely. It complements single-issue prevention strategies that may be effective in controlling discrete problems but often are mismatched to contemporary public health goals such as eliminating disparities, reducing overall burden of disease, avoiding activity limitation, maintaining emotional balance, and promoting life satisfaction.

Broad Public Health Goals

The conquest of many infectious diseases in the last half of the twentieth century ushered in the era of chronic disease and with it came new public health priorities (Figure 3). These goals differ from the usual public health objective, which focuses on reducing the rate of a specific disease. What's unique about these goals is that they cannot be achieved unless many—in some cases all—individual affliction-fighting efforts are successful simultaneously. For instance, a successful substance abuse prevention program could protect children from becoming addicted to drugs. But without an equally effective strategy for teaching conflict resolution, those same children could become the victims of gun violence. Without organizing around broader goals, we can end up with many programs that are “effective” and communities that are no healthier. A syndemic orientation therefore reminds us that at the community level public health's responsibilities do not stop with the delivery of effective disease prevention services. Indeed that is just the beginning.

Figure 3 New Public Health Priorities

- Eliminating disparities
- Reducing overall burden of disease
- Avoiding activity limitation
- Maintaining emotional balance
- Promoting life satisfaction

Immediate Implications

Whereas the usual public health approach addresses one issue at a time and begins by defining the *disease* in question, a syndemic orientation places multiple afflictions in context. The first task is to define the *community* in question (MacQueen, McLellan, Metzger, 2001). With this frame of reference, the next step involves identifying links among the entire set of issues that create excess burden of disease among the community's members.

Using assessment strategies that reveal clusters of linked afflictions, a syndemic orientation prompts extensive inquiry into the conditions that create and sustain health. It then presses on to question how and why those conditions might differ among groups; and even further to engage the struggle for directed social change. This empirical foundation offers a precise framework for understanding and countering the forces that perpetuate health disparities. The result is an approach that joins the science of epidemiology with the action agenda of community leaders.

Relating to Dynamic Community Conditions

The first step in putting a syndemic orientation to use involves recognizing the difference between a syndemic and a set of afflictions that have the same root causes. Syndemics always involve direct associations, whereas epidemics with shared causes have indirect relationships (through the causes) and may or may not be linked directly.

Imagine two health problems afflicting the same community. Both may be caused by the same thing (e.g., exposure to a toxic chemical), but they wouldn't form a syndemic unless the two interact directly, making one another worse. This is a strict criterion, though not a restrictive one as there are at least two forms of direct interaction (Figure 4). The first is through the incidence rate: affliction A could affect the likelihood of developing affliction B. The second is through the rate of recovery: affliction A could affect the likelihood or timing of recovering from affliction B.

Figure 4 Types of Affliction Ties

Direct	Indirect
<ul style="list-style-type: none"> Incidence Recovery 	<ul style="list-style-type: none"> Common causes <ul style="list-style-type: none"> ➢ Same biological agent ➢ Same behaviors ➢ Similar environments Managed by the same or similar organizations

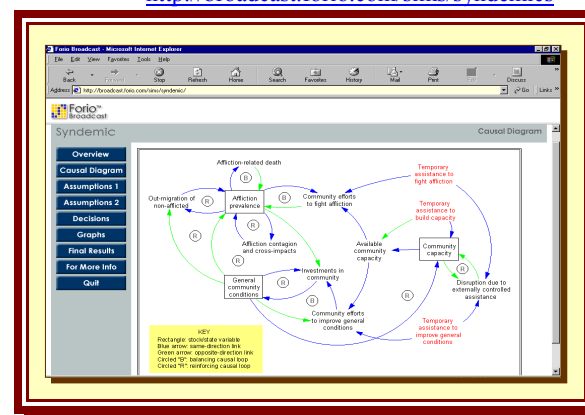
This emphasis on cross-impacts is important because that is one way in which a syndemic orientation becomes dynamic; and it is through those dynamics that the orientation relates to the real world, particularly the world of social action. It is undeniably important to find out what causes disease. But as difficult as that task may be, it must be followed by efforts to map the causal loops that relate afflictions and their risk factors to one another, and to the general community conditions of which they are a part. Because the real world is never static and constantly experiencing feedback, public health planners must be equipped with dynamic models that explain how systems change.

Preliminary Dynamic Model

With the help of Jack Homer, a system dynamics expert, along with the wisdom of veteran community leaders and researchers, we have constructed a preliminary dynamic model for syndemics. The model's behavior can be examined directly by people with technical expertise. Alternatively, for those who are not experts, we have created an Internet-based game which uses the model as its engine behind the screen. This allows many more stakeholders to see the model's assumptions, explore its behavior, and participate in iterative improvements (Figure 5) (Homer, 1996).

The basic scenario of the game involves a community in which the general conditions are not supportive of healthy living (e.g., imagine things like low home ownership, institutionalized racism, economic inequity, etc.). The threat of a syndemic is real because people are at risk for several afflictions, all of which are mutually reinforcing. Your goals as a player are to reduce the overall burden of disease while simultaneously enhancing community development and building adaptive capacity of the community to deal with new challenges in the future. This tool is still being refined, but the process of building it has been instructive in itself. In a relatively short time we've come to understand a great deal about how the dynamic character of a community can be incorporated in a

Figure 5 Syndemics Prevention Game
<http://broadcast.forio.com/sims/syndemics>



flexible, yet formal model for planning and policy development (Casti, 1997; Gilbert and Troitzsch, 1999; Homer, 2001; Homer, 1996; Maier and Grossler, 2000; Meadows and Robinson, 1985; Tessem and Davidsen, 1994).

Basic Dynamic Relations

One of the more surprising insights in developing the syndemics model was the recognition that there appear to be three basic types of relations that give rise to change in community systems: connection, influence, and direction (Figure 6). Mathematicians refer to these relations by the unique properties of the information required to understand each.

To comprehend connections, one gathers proximity data which define “What links to what?” To assess influence, one examines feedback data which address the question “What influences what?” And to direct the course of change, one needs navigational data which answer the most practical questions of all: Where am I now? Where can I go from here? What can I do here? and How do I get back to where I was? (Bolling, 2000)? Connection, feedback, and navigation are the pillars that make a syndemic orientation practical for use in achieving public health objectives. The next section illustrates how these ideas relate to the core public health functions.

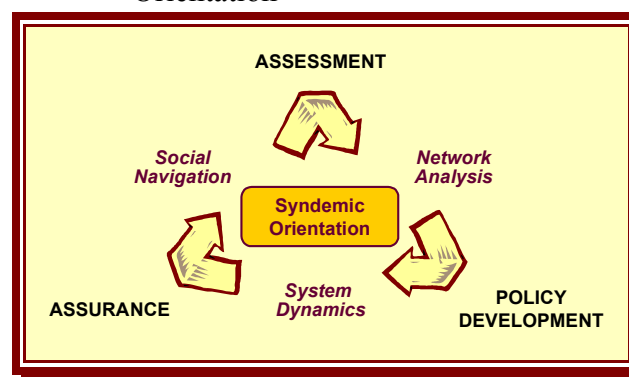
Figure 6 Basic Dynamic Relations

Connection	Influence	Direction
Proximity data	Feedback data	Navigational data
<ul style="list-style-type: none"> What links to what? 	<ul style="list-style-type: none"> What influences what? 	<ul style="list-style-type: none"> Where am I now? Where can I go? What can I do here? How do I get back to where I was?

Core Public Health Functions

A syndemic orientation is one among many perspectives that can be used to carry out the core public health functions put forward by the Institute of Medicine: assessment, policy development, and assurance (Institute of Medicine, 1988). These functions can be approached either with a focus on a single, categorical problem or on syndemics. The functions remain relevant for either objective, but the theories and methods that guide their fulfillment must change to accommodate shifts in scale. Linear approximations and other kinds of simplifying assumptions may be acceptable when working under narrowly circumscribed conditions (e.g., within clear boundaries of a clinic- or school-based health service program). But when operating on an ecological level, addressing the interacting effects of multiple afflictions in a community, those former conventions no longer suffice.

Figure 7 Core Functions Under a Syndemic Orientation



Three sets of theories and methods seem especially well-suited for working at the syndemic level. Each corresponds to one of the dynamic relations just discussed. *Network analysis* is the systematic study of connection patterns (Scott, 2000; Wasserman and Faust, 1994). *System dynamics* is a methodology for understanding the structure and behavior of feedback systems (Forrester, 1961, 1969, 1971; MIT System Dynamics in Education Project, 1996; Roberts, 1999; Sterman, 2000). And *social navigation* provides guidance in directing the course of change from one set of conditions to

another (Batschelet, 1981; Fisher, 1993; Hawai'i Community Services Council., 1999; Jammalamadaka and Sengupta, 2001; Mann, 1999; Thompson, 2000). Each technique has a firm foundation in other branches of applied science, but none have reached the mainstream of public health practice. Together, these and other techniques bring the tools for using a syndemic orientation within the grasp of every public health practitioner.

Future phases of this project will explore these methods more deeply, examining what each can contribute individually and collectively. That inquiry will raise moral and ethical questions about how each method can be incorporated into a participatory framework and how it relates to community values, questions about how each perspective supports social action and community mobilization, as well as technical questions about the extent to which the mathematical underpinning of each method matches the theories and findings in public health. Such a diverse set of concerns implies that the science behind a syndemic orientation cannot be defined without active collaboration among researchers, front-line practitioners, policy makers, community leaders, and other stakeholders. Our aim is not to create a single, rigid framework but to define a systems-oriented frame of reference that allows everyone in public health to work more effectively together.

Implications

Developing and incorporating a syndemic orientation into routine public health practice will likely take decades to achieve. Even at this early stage, however, it is clear that there are desirable implications for doing so (Figure 8). The idea of preventing syndemics builds upon proven principles of epidemiology, which have been applied largely to the first tier of a highly complex world. It complements single-issue prevention strategies that can be effective for discrete problems, but are often mismatched to the goal of improving community health in its widest sense. It alleviates problems of confounding by expanding the analytic frame of reference. It offers an alternative to the need for experimenting with real world comparison or control groups by relying on the powerful learning potential of simulated experiments. It introduces a forward-looking navigational perspective that places greater emphasis on comparing current position to the chosen destination, as opposed to movement from baseline. And it fosters stronger partnerships within the public health sector across program areas as well as between public health and every other sector of society.

Figure 8 Implications

- Builds upon proven principles
- Complements categorical approach
- Alleviates problems of confounding
- Avoids need for comparison/control groups
- Adheres to a navigational perspective
- Fosters essential partnerships

A syndemic orientation can also advance a specific course of social change, one focused on the connection between health and social justice. Public health professionals who operate under a syndemic orientation would have a stronger incentive to collaborate with community members in understanding the entire set of forces that create excess burden of disease. By examining epidemics in context and seeing syndemics where they exist, health scientists might begin to identify a different set of risk and protective factors and mobilize to change them. In all probability these factors would include those that human rights advocates see as fundamental to their work (i.e., education, justice, economic opportunity, housing, environmental protection, self-determination, social cohesion, peace, and so forth). Ultimately, the analyses conducted using a syndemic orientation could provide the science base for a community health bill of rights. Such a document might better define the conditions that all human groups deserve and should expect so as to create and sustain maximal health, quality of life, and social justice.

Areas for Exploration

A substantial amount of work must be done to understand what a syndemic orientation is and what it has to offer. The implications of organizing around the goal of preventing syndemics have not been systematically studied; methodologies have not been identified for planning and evaluating syndemic prevention strategies, nor are there efforts under way to prepare the public and the public health workforce to support initiatives in preventing syndemics. Even more pressing is the need to define terms and develop a glossary of easily understood definitions. Completing these tasks will help point the way to a promising new frontier for public health.

At present there is a growing consensus that a new, transdisciplinary approach is needed to solve current and emerging problems in public health. Even so, the field has not adopted a framework that transcends current tensions between science and practice at the community level. The Syndemics Prevention Network was formed to address precisely this challenge.

About the Network

The prospect of using a syndemic orientation to find new prevention opportunities is energizing people throughout the public health workforce. A coordinated effort, led by the Centers for Disease Control and Prevention, is now under way to explore the implications of syndemics for altering public health science and action.

The Syndemics Prevention Network exists to connect the broadest possible range of collaborators, promoting information exchange and mutual learning among those with an interest in creating (or restoring) the conditions that support safer, healthier people.

General information is available to everyone, but only registered members can access work in progress, collaboration tools, and related resources. A brief registration form is available at <http://www.cdc.gov/syndemics>.

Figure 9 Network Members in the US*



For Further Information

Please direct questions, comments, or suggestions about syndemics to:

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